FCC RF Exposure

EUT Description: Laser engraving machine
ModelNo.:Z40,A40,S40,X40,A60,S60,X60,Z60,A80,S80,X80,Z80
FCC ID: 2BAQ2-Z40
Equipment type: mobile equipment

1. Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*($900/f^2$)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*($180/f^2$)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

F = frequency in MHz
Formula: $Pd = (Pout*G)/(4*\pi*r^2)$
Where :
Pd = power density in mW/cm^2,
Pout = output power to antenna in mW;
G = gain of antenna in linear scale,
π = 3.14;
R = distance between observation point and center of the radiator in cm
Pd id the limit of MPE, 1 mW/cm2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Test Result of RF Exposure Evaluation

	Output power （dBm/ mW）	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm^2)	Limit (mW/cm^2)	Result
802.11b	8.26/6.6988	1.6	0.00193	1.0	Pass
802.11g	7.48/5.5976	1.6	0.00161	1.0	Pass
802.11n(20MHz)	6.92/4.9204	1.6	0.00142	1.0	Pass
802.11n(40MHz)	6.59/4.5604	1.6	0.00131	1.0	Pass

Turn-up power	
Mode	Peak power range(dBm)
WIFI	6.00-9.00

WIFI	Output power （dBm/ mW）	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm^2)	Limit (mW/cm^2)	Result
	9.0/7.9433	1.6	0.00228	1.0	Pass